

## ABSTRACT

An apparatus for and a method of direct MAC-to-MAC transmission over an optical ring network employing WDM or DWDM. In a first embodiment, the connections to the transmit and receive portions of two MAC devices in the node are crossed such that the transmitter and receiver of a MAC are not connected to the same wavelength based multiplexing/demultiplexing device. The drop and add module of the wavelength based multiplexing/demultiplexing device are connected in tandem on the same optical ring. A second wavelength based multiplexing/demultiplexing device is similarly configured and located on the opposite optical ring. The receive and transmit portions of a MAC device are split across two wavelength based multiplexing/demultiplexing devices wherein the receiver is connected to the drop module of one wavelength based multiplexing/demultiplexing device and the transmitter is connected to the add module of the other wavelength based multiplexing/demultiplexing device. In a second embodiment, the drop and add modules of each wavelength based multiplexing/demultiplexing device are connected to opposite rings, i.e. the drop module is connected to an optical ring carrying traffic in one direction while the add module is connected to an optical ring carrying traffic flowing in the opposite direction. The drop and add functions for a particular optical ring are split across wavelength based multiplexing/demultiplexing devices, rather than across MAC devices as is the case with the first embodiment described supra. Each MAC device is associated with the drop and add modules of the same wavelength based multiplexing/demultiplexing device.